

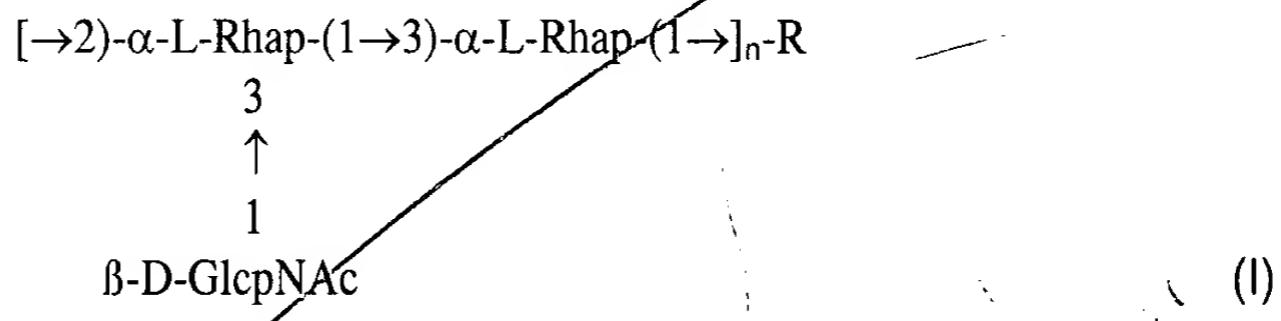
Fig. 1 schematically represents the structural design of group A carbohydrate (Fig. 1A) and the group A Variant carbohydrate (Fig. 1B). The depiction of the three dimensional structure of the group A carbohydrate clearly supports the observation that the serological specificity of the carbohydrate is directed towards the N-acetylglucosamine moiety of the carbohydrate.

In The Claims

Please cancel claims 61-72.

Please add the following claims:

80. A method of eliciting a protective immune response in a mammal against infection by group A streptococcal bacteria comprising administering a polysaccharide protein conjugate or polysaccharide protein fragment conjugate of formula (I)



wherein R is a terminal reducing L-rhamnose or D-GlcNAc and n is a number sufficient to confer an average molecular weight of the polysaccharide large enough to be protective when said polysaccharide is conjugated to protein or protein fragment, wherein the polysaccharide is covalently linked to protein or protein fragment, and wherein the conjugate is administered in an amount effective to elicit a protective response in the mammal against group A streptococcal infection.

81. The method of eliciting a protective immune response according to claim 80, wherein the mammal is a human.

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Claim 1

82. The method of eliciting a protective immune response according to claim 81, wherein n is about 1 to about 50.

83. The method of eliciting a protective immune response according to claim 82, wherein n is about 3 to about 30.

84. The method of eliciting a protective immune response according to claim 81, wherein the polysaccharide has a molecular weight of about 10 Kd.

85. The method of eliciting a protective immune response according to claim 81, wherein the protein is linked to the polysaccharide through a secondary amine bond.

86. The method of eliciting a protective immune response according to claim 85, wherein the protein is any native or recombinant bacterial protein.

87. The method of eliciting a protective immune response according to claim 86, wherein the protein is selected from the group consisting of tetanus toxoid, cholera toxin, diphtheria toxoid, and CRM₁₉₇.

88. The method of eliciting a protective immune response according to claim 87, wherein the protein of the polysaccharide-protein conjugate is tetanus toxoid.

89. The method of eliciting a protective immune response according to claim 81, wherein the polysaccharide is administered with a carrier selected from the group consisting of saline, Ringer's solution and phosphate buffered saline.

90. The method of eliciting a protective immune response according to claim 81, wherein the polysaccharide is administered with an adjuvant.

91. The method of eliciting a protective immune response according to claim 90, wherein the adjuvant is selected from the group consisting of aluminum hydroxide, aluminum phosphate, monophosphoryl lipid A, QS21 and stearyl tyrosine.

92. The method of eliciting a protective immune response according to claim 81, wherein the human is a child.